COURSE DESCRIPTION

This course, which is the second level of graphic communications, prepares students for work-related skills and advancement into graphic design and digital imaging and for gainful employment and/or entry into post-secondary education in the graphic communications industry. Content provides students the opportunity to acquire marketable skills in both theory and practical application. Advanced knowledge and skill in the printing industry will be enhanced in a laboratory setting that duplicates the printing industry and offers school/work based learning opportunities.

Prerequisite: Graphic Communications

Recommended: Career Management Success

Recommended Credits: 2 - 4

Recommended Grade Levels: 11th - 12th

NOTE: Standards 1 through 7 apply for 2 credits. Standards 8 through 13 apply for 2 additional credits. Standards 8 through 13 cover advanced digital image preparation and advance press standards and skills required by PrintED certification. Students focused on a career in graphic communications press operations will be exposed to the additional 2 credits covered in standards 8 through 13.

GRAPHIC COMMUNICATIONS PRODUCTION STANDARDS

- 1.0 Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.
- 2.0 Students will employ advanced industry skills in digital image preparation.
- 3.0 Students will employ advanced industry skills in image assembly/platemaking.
- 4.0 Students will employ advanced industry skills in press operations.
- 5.0 Students will employ advanced industry skills in finishing and bindery operations.
- 6.0 Students will demonstrate interpersonal and employability skills required in the printing industry.
- 7.0 Students will apply math skills to the printing industry.
- 8.0 Students will employ advanced industry skills book image layout.
- 9.0 Students will employ advanced industry skills in multiple placement image properties.
- 10.0 Students will employ advanced industry skills, in multiple color image preparation.
- 11.0 Students will employ advanced industry skills in multiple color press operations.
- 12.0 Students will apply accounting skills to the printing industry.
- 13.0 Students will apply graphic communications production knowledge and skills in a specific work-based or student initiative project learning experience.

STANDARD 1.0

Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

LEARNING EXPECTATIONS

The student will:

- 1.1 Incorporate positive leadership skills in school, community, and work related activities.
- 1.2 Participate in SkillsUSA-VICA as an integral part of the classroom instruction.
- 1.3 Assess situations in the printing industry and develop a presentation offering solutions or improvement.
- 1.4 Serve in leadership positions in the school and community.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 1.1 Demonstrates character and leadership skills using creative and Critical-Thinking skills.
- 1.2 Plans, conducts, and participates in meetings according to the acceptable rules of parliamentary procedure.
- 1.3 Analyzes a situation and uses the *Professional Development Program*, SkillsUSA-VICA to resolve it.
- 1.4.A Participates as a team leader.
- 1.4.B Participates in a community service project.

SAMPLE PERFORMANCE TASKS

- Participate in various SkillsUSA-VICA programs and competitive events.
- Develop an annual program of work.
- Conduct a meeting.
- Complete Level 3 of the *Professional Development Program*, SkillsUSA-VICA.

INTEGRATION LINKAGES

STANDARD 2.0

Students will employ advanced industry skills in digital image preparation.

LEARNING EXPECTATIONS

The student will:

- 2.1 Evaluate basic design and type principles.
- 2.2 Use appropriate software for page design and layout.
- 2.3 Diagram digital image preparation equipment.
- 2.4 Operate all digital image preparation equipment.
- 2.5 Output correct material for production of printed piece.
- 2.6 Incorporate safety rules and procedures.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 2.1.A Utilizes principles of design.
- 2.1.B Incorporates the basic design principles in hand drawn sketches and measured layouts.
- 2.2.A Selects appropriate software (word processing, page layout, and graphic) for page design and layout.
- 2.2.B Uses appropriate software for word processing, graphics, scanning, and page layout.
- 2.3 Demonstrates the steps involved to create a printed piece using digital image preparation equipment.
- 2.4 Designs and produces a document using various equipment and software involving digital image preparation.
- 2.5 Outputs media for use in image assembly and platemaking.
- 2.6.A Follows Occupational Safety & Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements.
- 2.6.B Develops a presentation using the principles of unity, contrast, page proportion, and balance.

SAMPLE PERFORMANCE TASKS

- Work as a team to create a brochure using text, graphics, and illustrations.
- Work as a team to create an 8-page booklet using text, graphics, and illustrations.
- Develop a notepad and output media to be used in further operations.

INTEGRATION LINKAGES

Art, Math, Math for Technology, Chemistry, Science, Health, Manipulative Skills, Communication Skills, Teamwork Skills, Language Arts, Research and Writing Skills, Decision-Making Skills, Critical-Thinking Skills, Secretary's Commission on Achieving Necessary Skills, (SCANS), Occupational

State Board of Education Approved February 2002

Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Tennessee Occupational Safety and Health Administration (TOSHA), PrintED, SkillsUSA-VICA

STANDARD 3.0

Students will employ advanced industry skills in image assembly/platemaking.

LEARNING EXPECTATIONS

The student will:

- 3.1 Employ skills needed to prepare layout-masking sheet.
- 3.2 Demonstrate film assembly and stripping skills.
- 3.3 Operate platemaking equipment.
- 3.4 Incorporate safety rules and procedures.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 3.1 Lays out, measures, and rules an unruled masking sheet.
- 3.2 Strips single and multicolor flats for platemaking.
- 3.3 Prepares metal plates.
- 3.4 Practices Occupational Safety & Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements.
- 3.5 Calculates the cost of unsafe practices.

SAMPLE PERFORMANCE TASKS

- Examine hazards present when using razor blades and knives.
- Lay out, measure, and rule an unruled masking sheet showing relevant gurdiness for 8 ½ x 11 single color work.
- Expose, process, and store a plate to be used on a printing job.
- Follow safety check tests for procedures in image assembly/platemaking.

INTEGRATION LINKAGES

STANDARD 4.0

Students will employ advanced industry skills in press operation.

LEARNING EXPECTATIONS

The student will:

- 4.1 Demonstrate plate-handling skills.
- 4.2 Analyze various types of paper.
- 4.3 Compare various press setups.
- 4.4 Demonstrate press operations on single and multi-color work.
- 4.5 Perform major cleanup and preventive maintenance.
- 4.6 Incorporate safety rules and procedures for press operation.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 4.1.A Identifies different types of plates and materials.
- 4.1.B Prepares metal plate and makes any necessary corrections.
- 4.2.A Determines paper grain.
- 4.2.B Handles and jogs paper.
- 4.2.C Identifies paperweights, size, and coatings.
- 4.3.A Sets up press to print envelopes.
- 4.3.B Sets up press to print 20# bond.
- 4.3.C Sets up press to print cover stock.
- 4.4 Prints single and multi-color jobs using a single and/or two-color press or T-head.
- 4.5.A Cleans rollers, applies roller treatment, and sets pressures.
- 4.5.B Outlines preventive maintenance procedures.
- 4.6 Follows all safety check tests, rules, and regulations for press operations.

SAMPLE PERFORMANCE TASKS

- Prepare a presentation on plate handling, paper handling, and press setups.
- Make plate, set-up press, and print complete job.
- Check roller pressure and make any necessary adjustments.
- Enter the SkillsUSA-VICA Job Skill Demonstration competition.
- Time operations on press setup.
- Perform complete checklist for cleanup.
- Evaluate the effectiveness of preventive maintenance.

INTEGRATION LINKAGES

STANDARD 5.0

Students will employ advanced industry skills in finishing and bindery operations.

LEARNING EXPECTATIONS

The student will:

- 5.1 Demonstrate finishing and binding operations.
- 5.2 Perform padding operations.
- 5.3 Incorporate safety rules and regulations for finishing and binding operations.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 5.1.A Sets up and operates the paper cutter.
- 5.1.B Sets up and operates a folder.
- 5.1.C Sets up and operates a stitcher.
- 5.1.D Sets up and operates a paper drill.
- 5.1.E Sets up and operates a collator.
- 5.1.F Sets up and operates a mechanical binder.
- 5.2 Pads bond stock and multiple carbonless forms.
- 5.3.A Completes safety checklist on each piece of equipment used.
- 5.3.B Incorporates safety rules in the operation of each piece of equipment.

SAMPLE PERFORMANCE TASKS

- Participate in SkillsUSA-VICA Job Skill Demonstration competition.
- Draw a paper-cutting layout and perform the cutting operations.
- Fold an 8 1/2 X 11 sheet into a tri-fold brochure.
- Make a 12 page dummy and saddle stitch it.
- Drill several sheets to match a standard 3-ring binder.
- Collate an eight-page booklet for flat stitching.
- Work in teams to bind several multi-page books on a mechanical binder.
- Work in teams to make several note pads with 100 sheets per pad.
- Pad 3-part carbonless form sets.

INTEGRATION LINKAGES

STANDARD 6.0

Students will demonstrate interpersonal and employability skills required in the printing industry.

LEARNING EXPECTATIONS

The student will:

- 6.1 Demonstrate employability skills such as pride in work and individual responsibility.
- 6.2 Demonstrate job retention skills.
- 6.3 Compare career paths within the printing industry.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 6.1 Designs a check sheet of employability skills and continuing education in local graphic communications industries.
- 6.2.A Analyzes job retention skills and performs a self-evaluation.
- 6.2.B Compares financial benefits of long-term employment with short-term.
- 6.2.C Evaluates parts of a job performance review.
- 6.3 Evaluates organizations that employ graphic arts employees.

SAMPLE PERFORMANCE TASKS

- Complete Level 4 of the *Professional Development Program*, SkillsUSA-VICA.
- Develop personal career path objectives.
- List personal traits and attitudes that are important for successful careers in the printing industry.
- Develop a career presentation for graphic communications.
- Participates in mock performance review.

INTEGRATION LINKAGES

STANDARD 7.0

Students will apply math skills to the printing industry.

LEARNING EXPECTATIONS

The student will:

- 7.1 Analyze cost awareness factors pertaining to the printing industry.
- 7.2 Evaluate practices for waste management in the printing industry.
- 7.3 Estimate costs of printing projects.
- 7.4 Calculate costs pertaining to various stations of the printing station.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 7.1.A Determines labor costs as related to printing projects.
- 7.1.B Determines cost of consumable items required for printing project.
- 7.1.C Calculates markup to recover combined expenses and profit on printing projects.
- 7.2 Develops recycling plan for silver and aluminum reclamation and waste paper recovery.
- 7.3.A Develops a detailed statement of all costs and charges related to a printing project.
- 7.3.B Quotes actual selling price for printing projects.
- 7.3.C Calculates variable costs directly related to printing projects.
- 7.4 Develops a flow chart to determine time involved in completing a project from prepress stages through bindery.

SAMPLE PERFORMANCE TASKS

- Set up operations and schedule press runs.
- Complete a job ticket.
- Calculate savings accrued by buying bulk paper.
- Calculate the cost of waste products.
- Calculate variable cost that increases or decreases with production volume.
- Develop invoices for printing projects.

INTEGRATION LINKAGES

STANDARD 8.0

Students will employ advanced industry skills book image layout.

LEARNING EXPECTATIONS

The student will:

- 8.1 Evaluate correct layout for type or book assembled.
- 8.2 Create various components needed to layout different type books.
- 8.3 Analyze identified problems involved with book layout.

PERFORMANCE STANDARADS: EVIDENCE STANDARD IS MET

The student:

- 8.1.A Determines correct layout to meet book, equipment, and material restraints.
- 8.1.B Uses correct terminology for book assembly.
- 8.2.A Demonstrates diagram for saddle stitch books including page creep.
- 8.2.B Creates film flats for saddle stitch books.
- 8.2.C Demonstrates diagram for perfect bound books including appropriate gutter.
- 8.2.D Creates film flats for perfect bound books.
- 8.2.E Creates, folds, and stitches layout dummies using signatures for saddle stitch book.
- 8.3. Evaluates and solves common problems involved with book layout.

SAMPLE PERFORMANCE TASKS

- Using a previously produced book or magazine, develop layout diagram and dummy to meet requirements of different size equipment used in commercial printing companies.
- Work in conjunction with other classes to produce multiple page newsletters or newspapers.
- Working in teams, evaluate book layout and identify and solve possible problems prior to
 production. Brainstorm possible changes in the printing industry including equipment or training to
 solve common problems.

INTEGRATION LINKAGES

Art, Math, Math for Technology, Chemistry, Science, Health, Manipulative Skills, SkillsUSA-VICA, *Professional Development Program*, SkillsUSA-VICA, Communications and Writing Skills, Applied Communications, Language Arts, Teambuilding Skills, Research, Social Studies, Problem Solving, Interpersonal Skills, Employability Skills, Critical-Thinking Skills, SCANS (Secretary's Commission on Achieving Necessary Skills), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), PrintED, Tennessee Occupational Safety and Health Administration (TOSHA)

STANDARD 9.0

Students will employ advanced industry skills in multiple placement image properties.

LEARNING EXPECTATIONS

The student will:

- 9.1 Evaluates skills needed to prepare layout-masking sheet.
- 9.2 Demonstrate various imposition systems.
- 9.3 Demonstrate step & repeat using pin registration system.
- 9.4 Incorporates safety rules and procedures.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 9.1.A Lays out, measures, and rules unruled masking sheets.
- 9.1.B Comprehends guidelines for finished size 2/sided work and turn process.
- 9.2.A Strips film flat using work and turn process.
- 9.2.B Strips film flat using work and tumble process.
- 9.3 Strips film flat for multiple exposure using pin registration system.
- 9.4 Employs Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements.

SAMPLE PERFORMANCE TASKS

Examine hazards present when using razor blades and knives.

Passes a safety test with 100% accuracy on equipment, tools, chemicals used in the multiple placement image assembly process.

Follow safety check tests for procedures in image assembly/platemaking.

Lay out, measure, and rule an unruled masking sheet showing relevant guidelines for 8.5" x 11" finished size 2/sided flyer produced on 11"x17" using work and turn process.

Lay out, measure, and rule an unruled masking sheet showing relevant guidelines for 8.5" x 11" finished size 2/sided flyer produced on 11"x17" using work and tumble process.

Create film flat to run a 4 up job stepping film using pin register system.

INTEGRATION LINKAGES

Art, Math, Math for Technology, Chemistry, Science, Health, Manipulative Skills, SkillsUSA-VICA, *Professional Development Program*, SkillsUSA-VICA, Communications and Writing Skills, Applied Communications, Language Arts, Teambuilding Skills, Research, Social Studies, Problem Solving, Interpersonal Skills, Employability Skills, Critical-Thinking Skills, SCANS (Secretary's Commission on Achieving Necessary Skills), Occupational Safety and Health Administration (OSHA), Environmental

Protection Agency (EPA), PrintED, Tennessee Occupational Safety and Health Administration (TOSHA)

STANDARD 10.0

Students will employ advanced industry skills in multiple color image preparation and assembly.

LEARNING EXPECTATIONS

The student will:

- 10.1 Describe and demonstrate the methods used to create trap.
- 10.2 Assemble a job using complementary flats.
- 10.3 Describe and demonstrate the methods used to create flat colors using screens.
- 10.4 Describe color theory.
- 10.5 Describe the methods of screen angling as used in process color assembly.
- 10.6 Strip a process color job using composite film.
- 10.7 Produce a multi-colored proof.
- 10,8 Incorporate safety rules and procedures for press operation.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 10.1 Produce multi-color film with correct trap for use on one and multi-color presses.
- 10.2 Assemble film flats for a job using knock out and overburn flats.
- 10.3 Assemble film flats to produce variations to PMS colors using screen tints.
- 10.4 Describe and demonstrate how different colors affect each other.
- 10.5 Demonstrate the correct screen angle for each process color.
- 10.6 Strip film flats for a process color job using only composite film.
- 10.7 Use film flats from previously stripped project to produce a multi color proof.
- 10.8 Follows all safety check tests, rules, and regulations for prepress operations.

SAMPLE PERFORMANCE TASKS

- Create multi-color film for a 4/color business card incorporating type that has to be trapped into background. (This film can be used for many of the following tasks.
- Create an over burn flat to add a metallic color to the above-mentioned project.
- Use a color wheel to demonstrate how primary colors create supplementary colors
- Enter the SkillsUSA-VICA Job Skill Demonstration competition.
- Create film flats from previously made 4/color film using common marks and control bars.
- Perform complete checklist for quality and cleanup.
- Produce multi-color proofs such as Color Key or Match Print. Instructors should contact industry
 and advisory committee members for use of film overlay proof /Color Key materials or film
 lamiment proof/ Match Print material and equipment.

INTEGRATION LINKAGES

STANDARD 11.0

Students will employ advanced industry skills in multiple color press operations.

LEARNING EXPECTATIONS

The student will:

- 11.1 Understand a variety of different impositions.
- 11.2 Demonstrate knowledge of varnishes and coatings.
- 11.3 Produce a 4-color process job.
- 11.4 Describe and demonstrate the purpose and use of color bars.
- 11.5 Understand all safety rules and practices associated with this operation.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 11.1 Print a series of jobs using a variety of different impositions.
- 11.2 Apply varnishes or coatings to a previously printed job.
- 11.3 Print a 4/color-process job on a multi color press.
- 11.4 Interpret color bars on a press sheet to determine quality and corrective action if needed
- 11.5 Incorporates safety rules in the operation of each piece of equipment.

SAMPLE PERFORMANCE TASKS

- Participate in SkillsUSA-VICA Job Skill Demonstration competition.
- Print a 2-sided job using work & turn and work & tumble imposition.
- Apply a spot varnish to highlight a previously printed job.
- Print a four-color job using materials previously produced.
- Interpret color bars and slur indicator to determine press and print quality.
- Pass safety test with 100% on press operation.

INTEGRATION LINKAGES

INTEGRATION LINKAGES

Art, Math, Math for Technology, Chemistry, Science, Health, Manipulative Skills, SkillsUSA-VICA, *Professional Development Program*, SkillsUSA-VICA, Communications and Writing Skills, Applied Communications, Language Arts, Teambuilding Skills, Research, Social Studies, Problem Solving, Interpersonal Skills, Employability Skills, Critical-Thinking Skills, SCANS (Secretary's Commission on Achieving Necessary Skills), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), PrintED, Tennessee Occupational Safety and Health Administration (TOSHA)

STANDARD 12.0

Students will apply accounting skills to the printing industry.

LARNING EXPECTATIONS

The student will:

- 12.1 Complete and implement a job schedule.
- 12.2 Complete a job cost schedule.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 12.1.A Calculates time involved in completing various job from pre press operations to bindery and packing for shipping.
- 12.1.B Schedules various job duties and implements production plan.
- 12.1.C Determines fixed time that a job is estimated to take in each phase.
- 12.1.D Determines extra charge to be made if a delay on the press results from awaiting customer approval of press proofs.
- 12.1.E Evaluates safety issues and implements safe working conditions.
- 12.2.A Determines the effects of spoilage on profit.
- 12.2.B Calculates print estimations for various print jobs including variable and fixed cost of operations.
- 12.2.C Employs electronic estimating software to calculate cost.
- 12.2.D Predetermines percentage added to the job price to recover combined expenses and profit.

SAMPLE PERFORMANCE TASKS

- Given case scenarios students calculate production time, costs, and profits of given jobs.
- Working in teams, students develop a production plan for a given job. Areas of responsibility are
 assigned and time schedules are developed. Cost estimates are developed and profit is determined
 on fixed and variable costs components. One student should be assigned to supervise the
 production.

INTEGRATION LINKAGES

Art, Math, Math for Technology, Chemistry, Science, Health, Manipulative Skills, SkillsUSA-VICA, *Professional Development Program*, SkillsUSA-VICA, Communications and Writing Skills, Applied Communications, Language Arts, Teambuilding Skills, Research, Social Studies, Problem Solving, Interpersonal Skills, Employability Skills, Critical-Thinking Skills, SCANS (Secretary's Commission on Achieving Necessary Skills), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), PrintED, Tennessee Occupational Safety and Health Administration (TOSHA)

STANDARD 13.0

Students will apply graphic communications production knowledge and skills in a specific work-based or student initiative project-based learning experience.

LEARNING EXPECTATIONS

The student will:

- 13.1 Apply principles of graphic communications production to a work-based or school project-based learning situation.
- 13.2 Integrate time management principles in organizing personal schedule to include school, work, social, and other activities.
- 13.3 Evaluate and apply principles of ethics as they relate to the work-based or school project-based learning experience.
- 13.4 Employ principles of safety to the work-based or school project-based learning experience.

PERFORMANCE STANDARDS: EVIDENCE STANDARD IS MET

The student:

- 13.1 Scores 80% or above on performance evaluations based on job readiness, knowledge of press operations, and finishing operations.
- 13.2 Designs a personal plan to include schedule of activities.
- 13.3 Records and assesses workplace events based on ethical implications.
- 13.4.A Scores 100% on safety performance and knowledge test covering press and bindery equipment, tools, chemicals, OSHA and TOSHA rules and regulations.
- 13.4.B Applies safety rules and regulations to the work site.

SAMPLE PERFORMANCE TASKS

- Compose and maintain a work journal that includes general work site experiences, time management planning, and evaluation of ethical behavior.
- Create a training manual for a new employee outlining the safety considerations for the job.
- Keep a record of wages and hours-earned working on the job.
- Keep a record of personal work related expenses and budget according.

INTEGRATION LINKAGES

Art, Math, Math for Technology, Chemistry, Science, Health, Manipulative Skills, SkillsUSA-VICA, *Professional Development Program*, SkillsUSA-VICA, Communications and Writing Skills, Applied Communications, Language Arts, Teambuilding Skills, Research, Social Studies, Problem Solving, Interpersonal Skills, Employability Skills, Critical-Thinking Skills, SCANS (Secretary's Commission on Achieving Necessary Skills), Occupational Safety and Health Administration (OSHA), Environmental

Protection Agency (EPA), PrintED, Tennessee Occupational Safety and Health Administration (TOSHA)

SUGGESTED RESOURCES

The New Graphic Communications Trade Customs/Business Practices, Sponsored by Graphic Arts Technical Foundation (GATF) AND Printing Industry of America (PIA), 1994 Graphic Arts Technical Foundation (GATF)

200 Deer Run Road Sewickley, PA 15143-2600 1-800-662-3916

www.gatf.org

Lern, Dean Phillip. *Graphics Master 6*. Kihel, HI Dean Lem Associates, Inc, 1997. *Productivity Benchmarks*: Sheetfed Printers Production Characteristics. Compiled by PIA, 1000. No. 00BT99676

Rugggles, Philip K. *Printing Estimating: Digital & Traditional Costing Methods for Graphic Imagining*. 4th ed. Albany, NY: Delmar Publishers Inc., 1996 No. 00FM4424 MAVCC - Graphic Arts: the Press and Finishing Processes